Cambium Networks

CMM5 Power and Sync Injector 56V

Package Contents

CMM5 Power and Sync Injector 56V box contains the following items:

Item	Description	Quantity	Item	Description	Quantity
1	Injector	1	5	8/32 SS Screw & Nut	1
2	Rack Mount Ears (Short)	2	6	Connector Bar	1
3	Rack Mount Ear (Long)	1	7	6/32 SS Countersunk Screws	8
4	6 Foot (1.8 Meter) USB Cable	1	8	Phoenix Input Connector	2

Quick Start Guide

Welcome to the CMM5. The CMM5 can be used in several different configurations, please read the following to determine what needs to be done for you to properly configure your hardware. Prior to starting your installation refer to the matrix below to insure the radio(s) you are using with the CMM5 are A. Compatible with the CMM5 and B. Running the correct firmware to work with the CMM5.

Cambium Networks' CMM's (Cluster Management Modules) use a physical layer protocol to deliver a precise one pulse per second (1PPS) signal to the Radio. The Radio uses this timing signal as a reference for the start of each frame that the radio transmitter sends over the air. By synchronizing the transmission times and framing periods, multiple Radios can co-exist on the same tower and even in the same geographic area minimizing self-interference.

The traditional mechanism used on products such as the PMP 450 and PMP 100 interrupts or 'breaks' the signal once per second to the Radio. This approach has proven reliable and accurate over many years and thousands of deployments. However, with the introduction of Gigabit Ethernet ports and higher power devices, this approach is no longer optimal and could lead to packet loss on Gigabit Ethernet signals.

With the CMM5 56V injector, Cambium is introducing a new physical layer protocol to pass synchronization signals to the Radios. This new protocol, referred to as CambiumSYNC, induces the timing pulse onto the cable without interrupting or breaking the power or data signal resulting in a more reliable mechanism for Gigabit Ethernet (1000BaseT) connections.

The CMM5 29V injector continues to use the traditional CanopySYNC approach and is completely compatible with the PMP 100 and PMP 450 equipment in the field.

Product	CMM5 Power Support	CMM5 SYNC Support	CambiumSYNC	CanopySYNC
PMP / PTP 450i	Y (56V)	Y	Y (R15.1 and later)	
PMP 450m	Y (56V)	Y	Y (R15.0 and later)	
ePMP 2000	Y (56V)	Roadmap	Roadmap	
PTP 670	Y (56V)	Roadmap	Y (01-00: Roadmap for 1Q17)	
PTP 700	Y (56V)	Roadmap	Y (02-20: Roadmap for 4Q16)	
PMP 450 / PTP 450	Y (29V version only)	Y	N	Y
PMP 100 / PTP 100	Y (29V version only)	Y	N	Y

CMM5 Stand Alone Configuration

Time/Power up to four 56 volt Cambium devices.

1. Connect the UGPS antenna to the UGPS port on the front of the CMM5.

2. Connect the power to the CMM5 Power Ports marked "Primary" and "Secondary".

3. Once the unit is powered the UGPS light will flash green momentarily then yellow for approximately thirty seconds then go back to green. Once it turns green the unit is ready to supply timing to the radios.

4. Connect the devices to be timed and powered to the ports marked "TO   RADIOS".

5. Connect the CMM5 Ports to your switch or router via the ports marked "TO SWITCH ARRAY"

6. The CMM5 ships with all four RJ45 "To Radio" ports enabled for power and sync.

7. The CMM5 ships with one long rack mount ear and 2 short rack mount ears. When installing a single CMM5 in a rack, install one long ear and one short ear on the unit. If you are flush mounting your CMM5 on a wall or in a cabinet install the two short ears rotated 90 degrees toward the bottom of the unit.
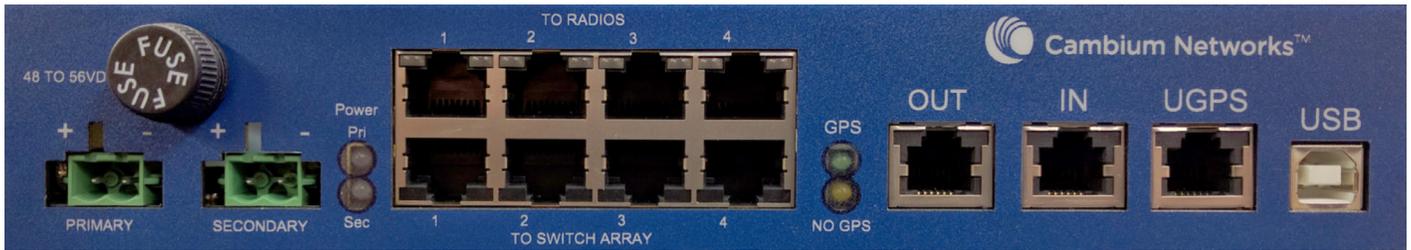
Local USB Serial Administration Instructions

USB VCP drivers (windows or linux)
If your PC does not already have compatible drivers, download and install from FTDI.
http://www.ftdichip.com/Drivers/VCP.htm
NOTE: Drivers have been included in Ubuntu since 11.10.

Putty
For users of linux and windows PCs:

To locate the com port in windows: (COM#)
Open Device Manager (Control panel, Administrative tools, computer Management, Device Manager), expand the Ports section, see what USB serial ports are listed, then connect the LMG device. New USB port will show up, this is the one you want.

To locate the com port in linux: (ttyUSB#)
In Linux, the VCP drivers will appear as /dev/ttyUSBx.
Plug in a FTDI based design/module/cable
Open a terminal window, and enter
dmesg | grep FTDI
The output on the terminal window should contain the following (some numbers may differ based on version or number of devices installed):
[10170.987708] USB Serial support registered for FTDI USB Serial Device
[10170.987915] ftdi_sio 9-1:1.0: FTDI USB Serial Device converter detected
[10170.991172] usb 9-1: FTDI USB Serial Device converter now attached to ttyUSB0
 [10170.991219] ftdi_sio: v1.6.0:USB FTDI Serial Converters Dr

Start Putty
In windows, click the shortcut or access through the start menu

In Linux (requires root access), click the shortcut if you have one, or In a terminal window, enter 'sudo putty'
Supply your password when prompted

To configure Putty, launch the application, then right click the title bar and select 'Change Setting…'
Select the Terminal setting:
　　　Under Set various terminal options
　　　Check Auto wrap initially on
　　　Check Implicit CR in every LF
　　　Leave checked Use background colour to erase screen
　　　Under Line discipline options
　　　　　For Local echo select 'Force on'
　　　　　For Local line editing, leave as 'Auto'
Select the Connection setting:
　　　Under Serial
　　　　　Select com port as identified above
Enter 38400 for Speed (baud)
　　　　　Enter 8 for Data bits
　　　　　Enter 1 for Stop bits
　　　　　Select 'None' for Parity
　　　　　Select 'None' for Flow control
Select the Session setting:
　　　Click in the 'Saved Sessions' field
　　　Type in a name
　　　Click Save
　　　Click Apply

In the Putty screen
Type '?' to get the basic menu
Type '-h' to get a detailed menu
Type '&0ae' to enable data aggregation
Type '&0qA' to see runtime data for the USB connected chassis

CMM5 Power and Sync Injector 56V	
Model Number	C000000L556A
Data Interface	4 ea RJ45 Gigabit Powered output ports "To Radios" 4 ea RJ45 Gigabit Data input ports "To Switch Array" 1 ea GPS timing port (RJ-12) 1 ea CMM5 USB Serial port for local administration 1 ea RJ12 Daisy Chain port "IN" 1 ea RJ12 Daisy Chain port "OUT"
Surge Suppression	Lightning Suppression for each "To Radios" RJ45Port
Power	Input Voltage: + or - 48 VDC Input Power Consumption: 400 watts Output Voltage: + or - 55 VDC Output Current: 0 - 1.8A per channel Output Power: 0 - 90 Watts per channel
Cabinet Temperature	-40° C to +55°C (-40° F to +131° F), 90% humidity, condensing
Physical	Max Distance from Managed Radios: 328 cable feet (100m) Max Distance to GPS Antenna: 100 cable feet (30.5m)
Dimensions	8.85" W x 15.75" D x 1.65" H (225mm x 400mm x 42mm)
Unit weight	6.6 pounds (3kg)
Power Interface Terminals	2 Power input ports for 48 VDC Power *(Power supplies sold separately)*